XXI. THE INDIAN GECKOS OF THE GENUS *GYMNODACTYLUS.*

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(Plates xvi-xvii.)

In his account of the reptiles of the Indian Empire and Ceylon in the *Fauna of British India* (1890) Mr. Boulenger recognized 18 species of *Gymnodactylus* as occurring within the geographical boundaries prescribed for that series. Three years later[1] he added two new species of the genus to the fauna of Burma; in 1905[2] I added another from the same country and in the following year[3] one from the Darjiling district. I have now to describe another from that district, while the form assigned provisionally by Mr. Boulenger in 1890 to *G. fedtschenkoi*, Strauch, proves to be distinct and must be given a new name. Including all these species, the number now known to inhabit our area is 23, if we include *G. brevipes*, which has actually been found only in Persian territory but probably also occurs in British Baluchistan.

In the following list the specific names of those species of which specimens have been examined in connection with this revision are printed in italics, the fact that the type or types are preserved in the Indian Museum being indicated by an asterisk. The numbers in brackets after the names are those assigned to the species in the "Fauna."

SPECIES OF *GYMNODACTYLUS* FOUND IN INDIA, BURMA AND CEYLON.

G. montium salsorum,* nov. (51).
G. scaber (Rüppel) (52).
[*G. brevipes*,* Blanford (53).]
G. kachhensis,* Stoliczka (54).
G. stoliczkai, Steindachner (55).
G. lawderanus,* Stoliczka (56).
G. gubernatoris,* nov.
*G. rubidus** (Blyth) (65).
G. himalayicus,* Annandale.
*G. khasiensis** (Jerdon) (64).
G. oldhamii,* Theobald (61).
G. triedrus, Günther (62).
G. jeyporensis, Beddome (58).
G. nebulosus, Beddome (57).
G. deccanensis, Günther (59).
G. albofasciatus, Boulenger (60).
G. peguensis, Boulenger.
G. consobrinoides,* Annandale.
*G. fasciolatus** (Blyth) (68).
G. frenatus, Günther (63).
G. pulchellus (Gray) (66).
*G. variegatus** (Blyth) (67).
G. feae, Boulenger.

[1] *Ann. Mus. Civ. Genova* (2) XIII (XXXIII), pp. 313, 314, pl. vii, figs. 1, 2 (1893).
[2] *Journ. As. Soc. Bengal* (*n. s.*) I, p. 82 (1905).
[3] *Ibid.* II, p. 287 (1906), and *Rec. Ind. Mus.*, I, pl. vi, fig. 1 (1907).

Convenient in some respects as is the order of species adopted in the "Fauna", it seems possible to find one that exhibits their affinities more clearly. The species now assigned to *Gymnodactylus* have at one time or another been distributed in several generic groups, but these, by the consent of herpetologists, have either been abandoned altogether or else restricted to lizards no longer included with the forms to be considered here. In the case of the abandoned genera there can be no doubt that the characters on which separation was based were not of a sufficiently definite nature to bear the interpretation put upon them. Nevertheless, the genus as now restricted falls naturally into several groups, distinguished by biological and geographical and to some extent anatomical features. Among the Indian, Burmese and Ceylonese forms it is possible to recognize 5 such groups, as follows :—

Group I. Type: **Stenodactylus scaber,** Rüppel.

The lizards of this group are small ground-geckos mainly diurnal in habits and of moderately stout form, although usually somewhat depressed. Their colouration is always indefinite and their most striking structural feature lies in the regular longitudinal series of large and prominent keeled tubercles that ornament their backs. Their tails, which are cylindrical or subcylindrical, are not prehensile. The distribution of the group is essentially Palaearctic and its representatives are found only in the north-western districts of our area. Indian species are *G. montium-salsorum*, *G. scaber*, [*G. brevipes*] and *G. kachhensis*. Among the extra-Indian forms is *G. elongatus*, Blanford, of which the types are in the Indian Museum (Nos. 5848-9, 15851 and 4208). It is found in Eastern Turkestan.

Group II. Type: **Gymnodactylus stoliczkai,** Steindachner.

This species is an isolated one, distinguished from those of the previous group by its comparatively smooth back, flattened form and expanded tail. It inhabits Eastern Turkestan and the neighbouring parts of Kashmir

Group III. Type: **Puellula rubida,** Blyth.

The species of this group are slender lizards of moderate size and mainly nocturnal and arboreal in habits, although they often hide on the ground by day. Their colouration is never conspicuous,[1] but they bear narrow, irregular cross-bars on the dorsal surface The dorsal lepidosis consists of minute rounded granules with larger and more prominent tubercles scattered amongst them; transverse subcaudal plates are never present. The group is an Oriental one, ranging as far east as the Philippines and no further

[1] As a rule it is less so in fresh specimens than in those which have been for a long time in spirit.

north or west than the Eastern Himalayas. Its species are found in dense "equatorial" forests. Those that occur in our area are *G. gubernatoris*, *G. rubidus*, *G. himalayicus* and *G. khasiensis*.

Group IV. Type: **Gymnodactylus nebulosus**, Beddome.

The species of this group are stoutly-built arboreal lizards with comparatively short tapering tails, which are probably prehensile and never have subcaudal plates. The colouration is always very conspicuous. The dorsal lepidosis varies considerably. All the species known are found in Peninsular India, Burma and Ceylon, none occurring in Assam and the Himalayas or in Malaysia, and only one in Burma. They are *G. oldhamii*, *G. triedrus*, *G. jeyporensis*, *G. nebulosus*, *G. deccanensis* and *G. albofasciatus*.

Group V. Type: **Cyrtodactylus pulchellus**, Gray.

The lizards associated with this species resemble those of group III in general structure and in habits, but are distinguished from them by their conspicuous colouration and by the fact that transverse plates are always developed under the tail. Some species attain a fairly large size. The headquarters of the group appears to be in Burma, whence no less than five species are known; several occur in Malaysia, one in Ceylon and one in the Western Himalayas. The species from India, Burma and Ceylon are *G. peguensis*, *G. consobrinoides*, *G. fasciolatus*, *G. frenatus*, *G. pulchellus*, *G. variegatus* and *G. feae*.

G. lawderanus cannot be definitely assigned to any of these groups but may be associated provisionally with *G. stoliczkai*. It is only known from a single deformed specimen.

The genus as a whole has a remarkable distribution, ranging from the shores of the Mediterranean through the mainland of Asia to the Malay Archipelago, Australia, Oceania, S. America and the West Indies. Most of the northern forms belong to my group I; the Malaysian species are distributed in groups III and V; all others probably belong to groups not represented in the Indian fauna. Apparently there are no true Ethiopian species. In the following paper, for the sake of reference, I either quote already published descriptions or give new ones of the species described since the issue of the *Fauna of British India, Reptiles and Batrachia* (1890).

In the notes on the different species I have included, under the heading of each, a list of the specimens in the collection of the Indian Museum. A large proportion of these were obtained by zoologists now no longer living, notably by Blyth, Stoliczka, W. T. Blanford, Theobald and Wood-Mason. Of recent years we have, in addition to specimens collected by the staff of the Museum, received examples of rare species from Mr. C. G. Rogers, I.F.S..

Major F. Wall, I.M.S., Lieut.-Col. A. R. S. Anderson, I.M.S., and H. E. Lord Carmichael, Governor of Bengal.

Key to the Species.

I. Dorsal keeled tubercles regularly arranged in about 12 longitudinal rows.
  A. Dorsal tubercles half as large as eye; both femoral and praeanal pores in the male; (subcaudal plates transverse) ... ... *G. montium-salsorum.*
  B. Dorsal tubercles much less than half as large as eye; only praeanal pores in the male.
    1. About 20 ventral scales across mid-belly; subcaudal plates enlarged.
      a. Subcaudal plates much longer than wide, entire ... ... *G. scaber.*
      b. Subcaudal plates as wide as long, often divided ... ... [*G. brevipes.*]
    2. About 30 ventral scales across mid-belly; no enlarged subcaudal plates ... *G. kachhensis.*

II. Dorsal tubercles, if present, scattered or arranged in over 12 irregular rows.
  A. Tail flattened and expanded at base ... *G. stoliczkai.*
  B. Tail cylindrical or subcylindrical.
    1. No enlarged transverse subcaudal plates.
      a. Dorsal surface covered with minute rounded tubercles among which are scattered a comparatively small number of larger ones; colouration inconspicuous; male pores present.
        i. Back almost smooth; larger tubercles feebly developed ... ... *G. lawderanus* (W. Himalayas).
        ii. Larger tubercles prominent and conspicuous under a hand lens.
          a. Male with both femoral and praeanal pores ... ... *G. gubernatoris* (Darjiling district, below 4000 ft.)
          β. Male without femoral pores.
            a. Praeanal pores of male in a deep longitudinal groove ... *G. rubidus* (Andaman Is.)
            b. No pubic groove.
              i. No lateral fold ... ... *G. himalayicus* (Darjiling district, 5000 ft.)
              ii. A slight fold separating ventral from lateral region on each side *G. khasiensis* (N. Burma; Assam).
      b. Dorsal surface covered with small rounded tubercles with much larger and more prominent ones arranged in numerous rows, dark with small pale spots; (no femoral pores in male).
        i. A double white line forming a nuchal collar ... ... *G. oldhamii* (Tenasserim).
        ii. No white lines on the neck ... *G. triedrus* (Ceylon).
      c. Dorsal scales never prominent; dark, pale-edged spots or stripes always conspicuous on dorsal surface; no male pores.

i. Subcaudal scales imbricate.
  α. Dorsal scales uniform, angular, arranged with great regularity ... *G. jeyporensis.*
  β. Dorsal scales rounded, by no means uniform, arranged irregularly ... *G. nebulosus.*
ii. Subcaudal scales juxtaposed, verticillate.
  α. Dorsal scales homogeneous ... *G. deccanensis.*
  β. Larger dorsal scales separated by much smaller and less regular ones *G. albofasciatus.*

2. Enlarged transverse subcaudal plates present; (dark, pale-edged cross-bars or spots conspicuous on dorsal surface; male pores present).
  a. Enlarged transverse plates absent from proximal part of tail ... ... *G. peguensis* (Hills of Pegu; Malay States).

  . Plates extending forwards to posterior end of postanal swelling at base of tail.
  . Dark cross-bars on back much narrower than pale interspaces; (no femoral pores in male) ... ... *G. consobrinoides* (Tavoy).

  i. Dark cross-bars or transverse spots on back at least nearly as wide as paler interspaces.
    α. No femoral pores in male.
      a Male with 10 to 12 praeanal pores *G. fasciolatus* (W. Himalayas).
      b Male with only 4 praeanal pores ... *G. frenatus* (Ceylon).
    β. Both femoral and praeanal pores in male.
      a Some of male praeanal pores in a longitudinal groove ... *G. pulchellus* (L. Burma; Malaysia).
      b No pubic groove in male.
        i. 22 to 26 ventral scales across mid-belly ... ... *G. variegatus* (Dawna Hills, Tenasserim.)
        ii. About 35 ventral scales across mid-belly ... ... *G. feae* (U. Burma).

GROUP I.

Gymnodactylus montium-salsorum, sp. nov.

(Plate xvii, fig. 1).

G. geckoides, Blyth (*nec* Spix), *Journ. As. Soc. Bengal*, XXII, p. 410 (1853).
G. caspius, Stoliczka (*nec* Eichwald), *Proc. As. Soc. Bengal*, 1872, p. 80; Theobald, *Cat. Rept. Brit. Ind.*, p. 91 (1876).
G. fedtschenkoi, Boulenger (*nec* Strauch), *Faun. Brit. Ind., Rept.*, p. 61 (1892); Annandale, *Ann. Mag. Nat. Hist.* (7) XV, p. 26 (1905).

Habit slender, moderately depressed. Limbs moderate; hind limb reaching axilla; fore limb reaching tip of snout. Tail slender, cylindrical, tapering.

Head ovoid but narrowly rounded at tip of snout, not depressed posteriorly; snout somewhat depressed but not spatulate, a little longer than distance between eye and ear; forehead somewhat concave; ear-opening of medium size, vertical.

Digits slender; subdigital lamellae narrow.

Lipidosis.—Back bearing about twelve longitudinal rows of very large and prominent trihedral keeled tubercles, which are in contact or almost in contact longitudinally on the hinder parts and are only separated transversely by minute irregular scales; keeled tubercles less close to one another on shoulders. Snout covered with prominent rounded tubercles as a rule feebly keeled and almost homogeneous; tubercles on occiput similar but more heterogeneous; those on sides of head prominent and strongly keeled. Upper arms and femora, except near the joints, covered above with large imbricate keeled scales; scales on limb-joints small; forearm and shin (especially latter) with large non-imbricate scales above; lower surface of limbs clad in fairly uniform smooth imbricate scales. Tail bearing numerous large keeled trihedral tubercles arranged on the dorsal surface and sides in transverse bands; lower surface with somewhat irregular enlarged median transverse plates. Ventral surface of body with smooth imbricate scales in from 15 to 18 rows and limited at either side by a row of small rounded tubercles. Throat with scales like those on belly; two pairs of chin-shields, the anterior pair of which meet so as to form a suture behind the mental. About 11 upper and 11 lower labials.

Pores.—A straight uninterrupted series of 32—34 femoral and praeanal pores in the male.

Colouration.—Five or six indistinct rows of spots arranged transversely on dorsal surface; general colour dull sandy or earthy.

Length of head ..	..	18 mm.
Length of body ..	..	31 ,,
Length of tail (partly reproduced)		55 ,,
Length of fore limb	..	20 ,,
Length of hind limb	..	24 ,,

Type.—No. 6185 *Rept. Ind. Mus.*

Habitat.—Salt Range, Punjab.

This lizard, although closely related to *G. fedtschenkoi*, Strauch, is, to judge from Nikolski's[1] figures, distinguished from that species by its much larger abdominal scales, less spatulate snout, differently arranged mental shields and other minor characters. From *G. scaber*, Strauch, it is at once distinguished by its longer snout and by the possession of femoral pores in the male. My description is not altogether in accord with those on which Boulenger based that in the "Fauna", but the actual discrepancies are small and the only specimens I have had before me are those which were examined many years ago by Blyth, Theobald and Stoliczka. In counting the ventral scales I have omitted the little rounded tubercles that separate them from the lateral tubercles, although the former are not very clearly differentiated.

[1] *Herpet. Turanica*, pl. iv, fig. 1 (1899) in Fedtschenko's *Reise in Turkestan.*

The specimens on which the new species is founded were sent to Calcutta sixty years ago and are not in good condition. They have totally lost their natural colours and, like some other very old specimens of lizards in our collection, are stained of a peculiar greenish shade. One, which I have labelled as the type, is, however, sufficiently complete to be figured. One was sent some years ago to the British Museum under the name *Gymnodactylus fedtschenkoi.*

6181, 6184 6185 (Type)	Salt Range, Punjab.	Dr. W. Theobald.

Gymnodactylus scaber (Rüppel).

Boulenger, *Fauna*, p. 62.

The distribution of this well-known species extends from Egypt and Abyssinia through south-western Asia to Afghanistan and Sind, thus resembling that of the fish *Cyprinodon dispar.*

Specimens :—

13455-9, 13450.	Bushire, Persian Gulf.	W. D. Cumming, Esq.
14328-9.	Afghanistan.	Dr. C. R. Green.
14589.	Malakhand.	Capt. McMahon.
14979, 14980-1.	Sind, Bombay Pres.	?

[Gymnodactylus brevipes, Blanford.]

Blanford, *Ann. Mag. Nat. Hist.* (4) XIII, p. 453 (1874) and *Eastern Persia* II, p. 344, pl. xxii, fig. 2 ; Boulenger, *Fauna*, p. 63.

I have nothing to add to Blanford's excellent description. The type, which is in good condition and has apparently retained its natural colouration, still remains unique. As it was found in Persian territory, the species should not, strictly speaking, be included in the Indian fauna.

3465 (Type). Aptan near Bampur, Persian Baluchistan (3000 ft.). Dr. W. T. Blanford.

Gymnodactylus kachhensis, Stoliczka.

Boulenger, *Fauna*, p. 63.

The range of this species and that of *G. scaber* overlap, but the latter is probably not found south of the Indus. The type of *G. kachhensis* is in fair condition, but the tail is loose. Other specimens in the collection are apparently cotypes or paratypes.

Specimens :—

13462.	Bushire, Persian Gulf.	W. D. Cumming, Esq.
14726-7	Quetta, Baluchistan.	Major C. G. Nurse.
13946.	N. Baluchistan, nr. Afghanistan frontier.	Dr. Maynard and Capt. McMahon.
11963, 11965-9, 11971-3	Sind.	J. A. W. Murray, Esq.
6192-6	Kachh.	Dr. F. Stoliczka.
5162 (Type)	,,	,, ,,

GROUP II.

Gymnodactylus stoliczkai, Steindachner.

Steindachner, *Novara Reise, Rept.* p. 5, pl. ii, fig. 2; Anderson (*Cyrtodactylus yarkandensis*), *Proc. Zool. Soc. London* 1872 p. 381, fig.; Boulenger (*G. stoliczkae*), *Fauna*, p. 63.

The representatives of this species in our collection apparently include the types of Anderson's *Cyrtodactylus yarkandensis*, but there is no evidence that either of his specimens was originally designated as such. The whole series was obtained on the Second (Forsyth's) Yarkand Expedition by F. Stoliczka. Some of the specimens are in excellent condition. The species is evidently common in Ladak.

Specimens :—

3792-3.	Yarkand (E. Turkestan).	Forsyth's Expedition.	
3796-9, 3801-3.	Kargil, Ladak.	,,	,,
5845.	Sneema, Ladak.	,,	,,
3771, 3774-6, 3778-82, 3789, 3793, 3795, 3777, 3799, 3792, 3794, 3783.	Ladak.	,,	,,
3762, 3764, 3766, 3768-70.	Chiliscombe, Ladak.	,,	,,

Gymnodactylus lawderanus, Stoliczka.

Stoliczka, *Journ. As. Soc. Beng.* XLI, p. 105, pl. ii, fig. 4 (1872); Boulenger, *Fauna*, p. 64.

It is evident from Stoliczka's figure that the type-specimen was deformed, probably owing to the tail having been reproduced. This specimen still remains unique and has, perhaps fortunately, lost its tail, the lepidosis of which was evidently abnormal. Otherwise it is in good condition. It does not, however, offer sufficient evidence, although the species is undoubtedly distinct, for a dogmatic statement as to the correct position of *G. lawderanus* in the genus. It may be allied to *G. mauritanicus* (Gray).

5890 (Type). Almora, Kumaon, W. Himalayas. Dr. F. Stoliczka.

GROUP III.

Gymnodactylus gubernatoris, sp. nov.

(Plate xvii, fig. 3.)

Very closely allied to *G. marmoratus*,[1] D. & B., but distinguished from that species by its darker colouration, smaller and

[1] As to the authors of this species see Barbour, *Mem. Mus. Harvard* XLIV (i), p. 79 (1912).

relatively shorter head, slighter habit, smaller ear-opening, larger ventral scales, smaller dorsal granules and more divergent series of praeanal pores.

Habit slender, moderately depressed. Limbs rather stout; hind limb reaching shoulder, fore limb a point midway between eye and tip of snout; tail slender, tapering, cylindrical, 1⅓ times as long as the head and body.

Head somewhat broadly ovoid, moderately depressed, flat on dorsal surface; forehead not concave; snout bluntly pointed, a little longer than distance between eye and ear, flat above; ear-opening small, its diameter not more than twice that of a dorsal tubercle.

Digits rather stout, transverse plates on ventral surface of proximal phalanges well developed; tubercles below joints large and prominent; transverse plates on distal phalanges reaching almost across digit.

Lepidosis.—Snout covered with small, regular, rounded granules considerably larger than those on occiput, the latter a little smaller than those on back, having mixed with them small rounded tubercles not much larger than granules on snout; back and dorsal surface of femora and shins covered with granules among which are mixed numerous fairly prominent round tubercles considerably larger than those on occiput; dorsal surface of fore limbs bearing small granules and tubercles; 11 upper, 9 lower labials; nostril between rostal, first labial and several small scales; rostral quadrilateral, deeply grooved in the upper half of its middle line, three small plates running transversely across its upper end, the two outer plates being much larger than the inner one; mental large, produced backwards and sharply pointed; two large chin-shields, forming a long suture behind mental and followed by several irregular plates; throat covered with small, smooth granules; ventral surface of body and limbs bearing small leaf-shaped imbricate scales; about 30 scales across mid-belly; a well-defined row of enlarged tubercles separating ventral from lateral region on either side; tail covered above with small, flat, juxtaposed plates; those on its ventral surface larger, more irregular and with a tendency to become imbricate.

Male pores.—A widely divergent series of 9 praeanal pores and, widely separated from them, 6 femoral pores on either side; the latter not joined to praeanal pores by a row of enlarged scales; several large scales in fork of praeanal series.

Colouration.—Dorsal surface dark brown, marbled with a paler shade and with numerous narrow irregular, zig-zag black cross-bars on back; many of the dorsal tubercles white; a black band extending from eye to ear on either side and connected with its fellow across back of occiput; ventral surface pale brownish; tail banded with alternate bars of grey and dark brown, those of the latter shade being the broader.

Type.—No. 17275 *Rept. Ind. Mus.*

Habitat.—Sikhim Himalayas (Darjiling) at low altitudes.

Measurements :—

Total length ..	..	..	115 mm.
Head and body	..	..	52 ,,
Tail ..	..	..	62 ,,
Head ..	..	..	15 ,,
Breadth of head	..	..	10 ,,
Hind limb ..	..	..	25 ,,
Fore limb ..	..	..	19 ,,

Closely allied as this species is to the Malayan *G. marmoratus*, it can be distinguished by the characters given in the first paragraph of the foregoing description. From *G. himalayicus*, the only related species known from the Sikhim Himalayas, the femoral pores of the male and the line of tubercles along each side are sound diagnostic features. I have seen only the following examples, the second of which is very young.

Specimens :—

17275 (Type).	Darjiling dist. (1000-3000 ft.).	H. E. Lord Carmichael of Skirling.
17276 (juv.)	,,	

Gymnodactylus rubidus (Blyth).

Boulenger, *Fauna*, p. 69 ; Annandale, *Journ. As. Soc. Bengal LXXIII* (2) Supplt., pp. 13, 14 (1904).

This species is confined to the Andaman group, on all the wooded islands of which, including the isolated Narcondam, it is abundant. Although usually seen on tree-trunks, it is also found on the ground under flowerpots in the gardens of the settlement of Port Blair. Its nearest ally is apparently *G. philippinicus* (Gray) from the Philippines but the subdigital lamellae of the latter are much more feebly developed. All the members of this group, to which *G. marmoratus* and *G. philippinicus* belong as well as the Indian forms, are very closely related, the strongest distinguishing features lying in the secondary sexual characters of the males.

The type is in good condition, except that the natural colouration has completely disappeared, as is the case with most of Blyth's types of lizards.

Specimens :—

6208 (Type).	Andamans.	Capt. Hodge.
5622-5, 5628-30, 5632-3, 5636, 6302-7, 6209-10, 6212-8, 14675.	,,	Capt. Hodge, Dr. Dobson, J. Wood-Mason, Esq., Major A. R. S. Anderson.
13888.	Little Andaman I.	F. Finn, Esq.
17149.	Ross I., Andamans.	C. A. Paiva, Esq.
15013–15.	Narcondam I.	Major A. R. S. Anderson.

Gymnodactylus himalayicus, Annandale.

Journ. As. Soc. Bengal (n. s.) II, p. 287 (1906); *Rec. Ind. Mus.* I, pl. iv, fig. 1 (1907).

Closely related as this species is to *G. khasiensis*, it totally lacks either a row of enlarged tubercles or a fold of skin separating the ventral from the lateral regions on the side. The type, which still remains unique, is in excellent condition. It was caught on the floor of a room of one of the hotels in a well-known Himalayan hill-station. I reprint the original description.

Description.—Head large, rather narrow, depressed, ovoid; snout slightly longer than orbit, obtusely pointed; forehead concave. Habit slender; digits compressed throughout; tail slightly longer than head and body, rounded, tapering. Dorsal surface of head and body granular, with numerous small conical tubercles on the body, base of head and hind limbs; on the back these tubercles tend to be arranged in 16 irregular lines: they are very much smaller than the ear-opening. Ventral scales small, leaf-shaped, imbricate; about 35 across middle of belly. No lateral fold or enlarged scales in its place. Rostal grooved; nostril between rostal, first labial and several small scales; ten upper and ten lower labials. Ear-opening ovoid, slanting, one-third as large as eye. Subdigital lamellae moderate, larger on proximal than on distal joints. Eleven praeanal pores arranged in a continuous, wide, **V**-shaped series; the scales posterior to them, between the arms of the **V**, enlarged; three postanal papillae (in the male) on either side; base of tail swollen below; no public groove; no femoral pores. Colouration as in *G. marmoratus*.

Measurements:—

Total length	111 mm.
Head and body	53 ,,
Tail	58 ,,
Hind limb	25 ,,
Fore limb	20 ,,
Breadth of head	9 ,,

15716 (Type).	Kurseong, Darjiling dist. (5,000 ft.).	Dr. N. Annandale.

Gymnodactylus khasiensis (Jerdon).

Boulenger, *Fauna*, p. 68; Annandale, *Rec. Ind. Mus.* VIII, p. 39 (1912).

This species is found in the hills of north-eastern Burma and in those of Assam both north and south of the Brahmaputra. It thus occurs in the extreme east of the Himalayan foot-hills.

Specimens:—

6197, 6199 (Type).	Khasi Hills, Assam.	Dr. Jerdon.
5818-9, 5835-3 } 5831, 5837-8 }	Cherrapunji, Khasi Hills.	Lieut. Bourne.

16896-7.	Kobo, Abor Hills (400 ft.).	S. W. Kemp, Esq. (Abor Exp. 1911-1912).
16879.	Upper Rotung, Abor Hills (2000 ft.).	
16918.	Upper Renging, Abor Hills (2150 ft.).	

GROUP IV.

Gymnodactylus oldhamii, Theobald.

(Plate xvii, fig. 2.)

Theobald, *Cat. Ind. Rept.* p. 81 (1876); Boulenger, *Fauna*, p. 67; Annandale, *Journ. As. Soc. Bengal* (n. s.) I, p. 83 (1905).

This species is closely allied to *G. triedrus* of Ceylon, differing therefrom chiefly in its longer and narrower head and less strongly keeled dorsal tubercles. The double white line extending backwards from the eye to meet its fellow of the opposite side is also a distinctive feature. There are about 30 ventral scales across the mid-belly.

In spite of Theobald's statement that the enlarged scales in the praeanal region are not pierced "probably owing to the sex of the specimen", the type is a male and one scale of this series bears a distinct pore. In two other males examined there are 4 praeanal pores arranged in two pairs, which are separated by an unpierced scale in the middle line. In the type, moreover, the scales corresponding to those which bear pores in these specimens, if not actually pierced, bear distinct impressions resembling pores in size and position. It is evident, therefore, that the normal number of praeanal pores is 4. As I have already pointed out (1905) elsewhere, there is no real evidence that this lizard occurs in South India. Beddome merely suggested that it might do so (see page 322 *post.*) and the history of the type, which is from Stoliczka's collection, is unknown. The other specimens since discovered are from Tenasserim.

Specimens :—

5858 (Type).	?	Dr. F. Stoliczka.
12660.	Mintao, Tavoy dist., Tenasserim.	Tenasserim Exp.
12675.	Tavoy.	Mus. colltr. (Moti Ram).

Gymnodactylus triedrus, Günther.

Boulenger, *Fauna*, p. 67.

This species is found in the hill-country of Ceylon at low altitudes.

Specimens :—

15082.	Ceylon.	Brit. Mus. (Ex.)
16710.	Peradeniya, Ceylon (*ca.* 1500 ft.).	F. H. Gravely, Esq.

Gymnodactylus jeyporensis, Beddome.

Beddome, *Proc. Zool. Soc. London* 1877, p. 685; Boulenger, *Cat. Liz. Brit. Mus.* I, p. 36, pl. iv, fig. 1 (1885), and *Fauna*, p. 65.

This species, which I have not seen, is only known from Patinghe Hill in the Madras Jeypur, situated in the north-eastern part of that Presidency.

Gymnodactylus nebulosus, Beddome.

Gymnodactylus nebulosus, Beddome, *Madras Journ. Med. Sci.* 1870; Boulenger, *Cat. Liz. Brit. Mus.* I, p. 34, pl. iv, figs. 1, 1*a* and *Fauna*, p. 64; Annandale, *Spol. Zeyl.* III, p. 189 (1906).
Gymnodactylus speciosus, Beddome, *loc. cit.*
Gymnodactylus collegalensis, Beddome, *loc. cit.*

Three distinct colour-forms exist of this species, which as a whole appears to be the most widely distributed of its group. The typical form (C of Boulenger's "Catalogue") bears on its back transverse spots, which are of a somewhat clouded nature and tend to be joined in pairs on the middle line. This form is perhaps endemic in the central parts of southern Peninsular India, but the two others do not appear to be localized apart from one another. Seemingly they occur together in the extreme southern and south-eastern part of the Peninsual and in Ceylon. One of them, which was described by Beddome as a distinct species under the name *G. collegalensis*, is distinguished from the typical form by its broader and more clearly defined spots, which are always separated in the middle line. This is form B of the "Catalogue." In the third form (*G. speciosus*, Beddome=form A, Boulenger) there are three broad cross-bars and no oval spots on the back. The specimen from Nelamba in the Indian Museum and two of the other three belong to the typical form, the fourth representing the var. *collegalensis*.

Specimens:—

12479 (typical).	Nelamba.	Purchased.
5881-1 (,,)	S. India.	Col. Beddome.
4311 (var. *collegalensis*).	,,	Col. Beddome.

Gymnodactylus deccanensis, Günther.

Günther, *Rept. Brit. Ind.*, p. 115, pl. xii, fig. E (1864); Boulenger, *Fauna*, p. 66.

This species apparently inhabits the northern part of the Western Ghats, being replaced in the southern part of the same range by the closely allied *G. albofasciatus*.

Specimens:—

7531.	Matheran, W. Ghats, Bombay Presidency.	Brit. Mus. (Ex.).
17219.	Helvak, Koyna Valley, Satara dist., Bombay (2000 ft.).	F. H. Gravely, Esq.

Gymnodactylus albofasciatus, Boulenger.

Cat. Liz. Brit. Mus. I, p. 37, pl. iv, fig. 2 and *Fauna*, p. 66.

This species differs greatly both in lepidosis and in colouration from *G. oldhamii*, with which Beddome confused it (see Boulenger, *Cat. Liz.* 1, p. 35). It is probably to this confusion that the belief of the occurrence in South India of the latter species is due (p. 320).

The only specimen in the Indian Museum is apparently a co-type.

15232. S. Canara, Western Madras. Brit. Mus. (Ex.) (*ex coll.* Beddome).

GROUP V.

Gymnodactylus feae, Boulenger.

Ann. Mus. Civ. Stor. Nat. Genova (1) XIII (XXXIII), p. 313, pl. vii, fig. 1 (1893).

I have not seen this species, for the specimens I referred to it in 1905 (*Ann. Mag. Nat. Hist.* (7) XV, p. 27) were actually young examples of *G. consobrinus*, Peters. That this was so was first suggested to me by Dr. F de Rooy after an examination of one of these specimens. As the original description of *G. feae* is not always available to Indian herpetologists I quote the essential parts of it.

"Head large, oviform; snout longer than the orbit, which equals its distance from the ear-opening; forehead and loreal region concave; ear-opening small, oval, oblique. Limbs elongate; digits strong, scarcely depressed at the base, strongly compressed distally; the basal phalanx with well-developed plates beneath. Head granular, the granules intermixed with small round tubercles from between the eyes to the nape, where they increase in size; rostal twice as broad as deep, with median cleft above; rostal and first labial entering the nostrils; seven or eight upper and eight or nine lower labials; mental triangular; two pairs of chin-shields, anterior largest and forming a suture behind the mental; throat minutely granulate. Body and limbs granular above, with numerous small, round, keeled tubercles; a series of small tubercles, on a slight fold, limiting the abdominal region; ventral scales small, cycloid, imbricate, 35 across the middle of the belly. Male with a cutinuous series of 32 pores along the thighs and across the praeanal region. Tail cylindrical, tapering, covered with minute granules intermixed with a few large flat, smooth tubercles, which do not form regular rings, except quite at the base; a series of large transverse plates below. Dark brown above, with four black bars, bordered with white tubercles, on the back, and a crescentic black, white-edged band from eye to eye across the nape; upper surface of head with large black spots,

separated by a whitish network; lower parts dark brown; tail black, with nine white cross-bands above." (Boulenger).

Gymnodactylus peguensis, Boulenger.

Boulenger, *Ann. Mus. Civ. Stor Nat. Genova* (1) XIII (XXXIII), p. 315, pl. vii, fig. 2 (1893); and *Fauna Malay Pen., Rept.*, p. 136 (1912); Laidlaw, *Proc. Zool. Soc. London* 1911 (1), p. 304; Annandale, *Rec. Ind. Mus.* VII, p. 91 (1912).

I have nothing to add to Mr. Boulenger's excellent descriptions (one of which I quote in full from the *Fauna of the Malay Peninsula*), except to say that the U-shaped band on the back of the head may be broken up into a series of large spots.

"Ear-opening subtriangular, half the diameter of the eye. Limbs moderate; toes short, scarcely depressed at the base, the plates under the basal phalanx small, much narrower than the digit, roundish, convex. Head granular, with minute tubercles on the occiput; rostal with median cleft above, entering the nostril; 9 upper and 7 or 8 lower labials; symphysial triangular; four pairs of chin-shields, the median largest and forming a suture behind the symphysial. Body and limbs granulate above, with numerous small, round, keeled tubercles; a feeble fold along the side; ventral scales small; imbricate about 45 in a transverse series. Males with a angular series of 7 or 8 praeanal pores; no femoral pores. Tail covered with small scales. Pale grey above, with blackish-brown markings edged with whitish, viz. several spots on the tip of the head, a U-shaped band from eye to eye across the nape, two series of large spots on the back, and a series of smaller spots along each side, lower parts whitish. From snout to vent 64 millim; tail 64." (Boulenger).

G. peguensis seems to me to be most nearly related to *G. variegatus* (Blyth) from the Amherst district of Tenasserim. Males of the two species are easily recognized by the number and arrangement of the pores; females can be distinguished only by slight differences in colouration and in the conformation of the head and by the smaller and more numerous ventral scales of *G. peguensis*. From *G. rubidus* (Blyth), with which Boulenger compares his species, it is distinguished by its conspicuous colouration, its much stouter habit, the form and lepidosis of its tail and other important characters. Laidlaw has recorded *G. peguensis* from the central region of the Siamese Malay States and his record is confirmed by Boulenger. In Burma it has only been found in the hilly districts of Pegu and Arrakan. In the Dawna range, in the interior of the Amherst district of Tenasserim, it is apparently replaced by *G. variegatus*.

Specimens:—

16719.	E. Yoma forest reserve, Thayetmyo dist., Pegu Yomas *ca.* 1000 ft.	C. G. Rogers, Esq.
17220.	Henzada dist., Arrakan Yomas.	,,

Gymnodactylus consobrinoides, Annandale.

(Plate xvi, fig. 1).

Journ. As. Soc. Bengal (n. s.) I, p. 82 (1905).

I have to thank the authorities of the Amsterdam Museum for giving me an opportunity of comparing the type of *G. consobrinoides* with an adult specimen of *G. consobrinus*, Peters. They are not so closely related as I thought; I take this opportunity to redescribe my own species.

Habit slender, cylindrical; limbs moderate, hind limbs reaching axilla, forelimb anterior border of eye; tail slender, cylindrical, tapering.

Head narrow and elongate, moderately flat, forehead not concave; snout slightly convex above, rounded at tip, slightly longer than distance between eye and ear; ear-openings minute.

Lepidosis.—Snout covered with rounded granules of somewhat unequal size, larger than those on the back of the head; latter mixed with small round keeled tubercles; dorsal lepidosis consisting of granules like those on the snout mixed with numerous round keeled tubercles of moderate size; no row of enlarged tubercles or fold of skin separating side from belly; tail covered with smooth imbricate scales above, with well-developed transverse plates below; scales on the throat granular, smooth; those on the belly smooth, imbricate; about 20 across mid-belly; rostral quadrangular, cleft, with several somewhat irregular enlarged scales behind it; nostril between rostral and several small scales; 10 upper, 9 lower labials; mental moderate, not produced backwards; a single pair of very large chin-shields forming a long suture behind mental and followed by several smaller enlarged scales in two rows on each side.

Male pores.—No femoral pores; an uninterrupted divergent series of 5 praeanal pores followed on the thighs by a row of enlarged scales which may bear impressions but are not pierced; no public groove.

Digits short and rather stout; subdigital lamellae by no means strongly developed.

Colouration.—Dorsal surface dull brown with several dark insulariform spots on the head, a **U**-shaped dark bar extending from eye to eye and 7 dark bars, much narrower than the interspaces and only reaching a short distance down the sides, on the back; the first of these bars consisting of two convergent wedge-shaped marks; tail barred; dorsal surface pale brown.

Measurements :—

Total length	..	..	110 mm.
Head and body	..	..	50 ,,
Tail ..	..	..	64 ,,
Head ..	..	..	16 ,,
Breadth of head	..	..	8 ,,
Hind limb ..	..	..	21 ,,
Fore limb ..	..	..	19 ,,

Only one specimen is now in the collection of the Indian Museum, the co-type having been sent to the British Museum some years ago.

12741 (Type). Tavoy dist., Tenasserim. Mus. colltr. (Moti Ram).

Gymnodactylus fasciolatus (Blyth).

(Plate xvi, fig. 3).

Naultinus fasciolatus, Blyth, *Journ. As. Soc. Bengal* XXIX, p. 114 (1860); Boulenger (*Gymnodactylus*), *Fauna*, p. 71.

The type and co-type are in good condition, except that the markings have almost completely disappeared. A female recently taken by Major Wall at Almora differs from them in having only six perfect dark cross-bars on the body, the seventh being represented by a few irregular marks. The complete cross-bars are broader than the interspaces and have sinuous margins. There are 30 (not 36) ventral scales across the mid-belly in the type; the other specimens agree in this respect.

The species is apparently endemic in the Western Himalayas at low and moderate elevations.

Specimens:—

6589 (Type).	Subathu, Simla dist. (foot hills).	W. Atkinson, Esq.
6595 (Co-type).	,, ,, ,,	,,
56514.	Almora, Kumaon (5300 ft.).	Major F. Wall.

Gymnodactylus frenatus, Günther.

Günther, *Rept. Brit. Ind.*, p. 113, pl. xii, fig. D. (1864); Boulenger, *Fauna*, p. 68; Annandale, *Spol. Zeyl.* III, p. 189 (1906).

Specimens:—

12470.	Ceylon.	Purchased.
15337.	,,	Ceylon Museum.

Gymnodactylus pulchellus (Gray).

Boulenger, *Cat. Liz. Brit. Mus.* I, p. 46, *Faun. Brit. Ind. Rept.*, p. 69; and *Fauna Malay Pen., Rept.*, p. 36.

A specimen in the British Museum labelled "Bengal" seems to be the only evidence for the occurrence of this not uncommon Malayan species north of Tenasserim. None of those in the Indian Museum are from Indian territory. In the Malay Peninsula *G. pulchellus* is found both in limestone caves and on tree-trunks.

Specimens:—

1760.	Johore, Malay Peninsula.	J. Wood-Mason, Esq.
15010.	Bukit Kutu, Selangor.	Selangor Mus. (Ex.)
15011.	Gunong Anging, Negri Sembilan.	,, ,, ,,

Gymnodactylus variegatus (Blyth).

(Plate xvi, fig. 2).

Naultinus variegatus, Blyth, *Journ. As. Soc. Bengal* XXVIII, p. 279 (1829); Boulenger (*Gymnodactylus*), *Faun. Brit. Ind., Rept.*, p. 70.

A reference to the original description shows that the type came not from Moulmein but from the interior of what is now the Amherst district: probably from the Dawna Hills, in which our second specimen was recently captured.

The type is in excellent condition, except that its colours have faded considerably, preserving only the outlines of the original markings.

Specimens :—

6188 (Type).	Country inland from Moulmein.	W. Atkinson, Esq.
16732.	Between Thingannyinaung and Sukli, Dawna Hills, Amherst dist., Tenasserim.	F. H. Gravely, Esq.

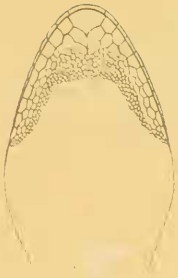
EXPLANATION OF PLATE XVI.

FIG. 1.—*Gymnodactylus consobrinoides*, Annand. Type, ♂.
FIG. 1*a*, hind leg, × 2. Fig. 1*b*, chin-shields, × 2.

,, 2.—*Gymnodactylus variegatus* (Blyth). Young female from Dawna Hills.
FIG. 2*a*, hind leg, × 2½. Fig. 2*b*, chin-shields, × 2.

,, 3.—*Gymnodactylus fasciolatus* (Blyth). Male from Kumaon.
FIG. 3*a*, hind leg, × 2. Fig. 3*b*, chin-shields, × 2.

1.



3b.

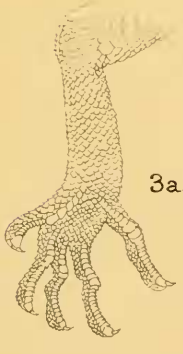
2.

3.

2a.

1b.

2b.



3a.

1a.

A.C. Chowdhary, del.

Bemrose, Collo., Derby.

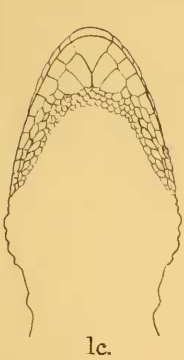
INDIAN SPECIES OF GYMNODACTYLUS.

EXPLANATION OF PLATE XVII.

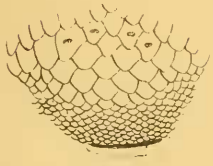
FIG. 1.—*Gymnodactylus montium salsorum*, Annand. Type, ♂.
FIG. 1*a*, hind leg, × 2. Fig. 1*b*, head in profile, × 2.
Fig. 1*c*, chin-shields, × 2.

,, 2.—*Gymnodactylus oldhamii*, Theobald. Type, ♂.
FIG. 2*a*, praeanal pores of normal male, × 3.

,, 3.—*Gymnodactylus gubernatoris*, Annand. Type, ♂.
FIG. 3*a*, hind leg, × 2. Fig. 3*b*, praeanal pores, × 3.

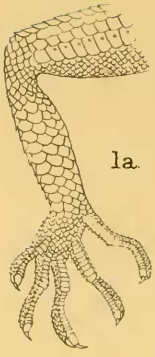


1c.



2a.

1.



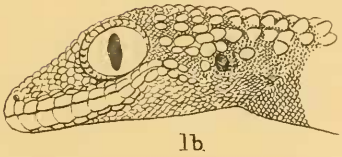
1a.

2.

3b.

3a.

3.



1b.

A C. Chowdhary, del.

Bemrose, Colls., Derby.

INDIAN SPECIES OF GYMNODACTYLUS.